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SKETCH LAND DEVELOPMENT PLAN
MOORE COUNTY, NORTH CAROLINA

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PLANNING IN MOORE COUNTY

Evidence of the numerous problems associated with irregular growth rates and isolated developing areas are conspicuous in Moore County, and the growth of the County during the recent past is expected to continue into the future unless existing conditions change.

Planning programs have been underway in various County communities since 1965. In order to provide Moore County with an agency able to prepare the necessary studies and plans for evaluating existing conditions and establishing guidelines for future development, the County Commissioners appointed a County Planning Board in September 3, 1965. The five member Moore County Planning Board is an advisory body of laymen who represent a diversity of occupations and a geographical cross-section of the County. Their recommendations for guiding and regulating future growth are directed to the County Commissioners. The duties of the Planning Board as described in the General Statutes (153-9 (40) are quite broad;

> ...to make a careful study of resources, possibilities and needs of the County, particularly with respect to the conditions that may be injurious to the public welfare or otherwise injurious, and to make plans for development of the County.

In addition to the preparation of such studies and plans for future development as are deemed necessary, the Planning Board also serves as the reviewing agency for the County Zoning Ordinance and Subdivision Regulations. The recommendations of the Planning Board regarding zoning and subdivisions matters submitted to the County Commissioners for final action.

The Planning Board is also charged with the responsibility of preparing a Comprehensive Plan for Moore County. Such a plan should indicate the areas that need further study. It is anticipated that detail studies will be required in the areas of zoning, subdivision control, housing, recreation, utilities, etc. In order to organize and plan the most advantageous direction, it was decided to prepare a Sketch Development Plan.

This document is the Sketch Development Plan. The plan is not intended to serve as the "final" plan for Moore County, it is, rather, a "working document" to serve as the basis for considering a "Comprehensive Plan" and detail studies and reports. The Sketch Development Plan also assembles basic information relative to future land development and community facilities planning and provides the format for the Comprehensive County Facilities Plan to be prepared later.

POPULATION, HOUSING, EMPLOYMENT AND INCOME

The purpose of this section is to highlight aspects of past and current population and economic conditions in Moore County as they relate to the future growth and needs of the County.

Population

The population of Moore County has been on an upswing since 1910. However, as can be seen in Table 1, one half of the Townships in Moore County lost population between 1960 and 1970. By far the largest growth between 1960 and 1970 occurred in Sandhill and McNeills Townships. (See Figure 1)

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Table 1
Township Population Data

Township	1910	1920	1930	1940	1950	1960	1970
Carthage	3152	3925	3985	4769	4913	4788	4640
Bensalem	2006	2220	2493	2574	2297	2565	2903
Sheffields	2218	2513	2745	3687	4057	4418	4607
Ritters	1489	1670	1542	1652	1475	2000	2056
Deep River	1101	942	788	682	454	426	357
Greenwood	1330	1643	2053	2266	2347	2058	1934
McNeills	2054	2943	6045	6314	7716	8895	10221
Sandhill	2038	2642	4554	4117	5379	5476	6442
Mineral Springs	1592	2890	4000	4908	4491	5419	5092
Little River	--	--	--	--	--	688	796
Total	17010	21388	28215	30969	33129	36733	39048

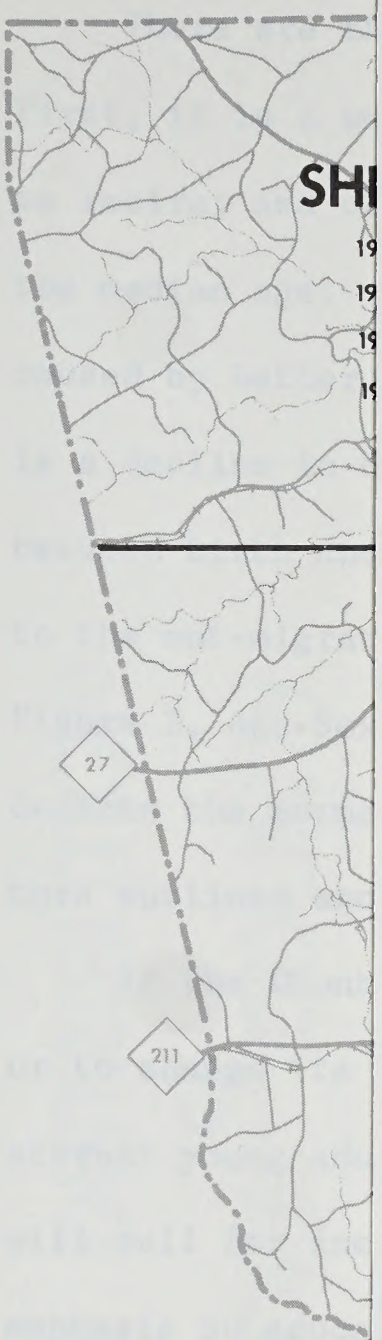
Source: Population of Counties and Minor Civil Divisions, Division of Community Planning, January, 1962.

At the same time Moore County's population is growing, changes are occurring within the population. The median ages of the population in 1950, 1960, and 1970 were 25.3, 26.3 and 28.4 respectively. The numerical shift between age groups can be seen in Table 2 and is graphically displayed in Figure 2.

Table 2
Age Distribution of Moore County Population

Age	1950	Percent	1960	Percent	1970	Percent
0-9	7568	22.8	8448	23.0	6894	17.6
10-19	6259	19.0	7325	20.0	8314	21.3
20-29	5135	15.5	4126	11.2	5045	13.0
30-39	4486	13.5	4582	12.5	3931	10.1
40-49	3615	10.9	4318	11.8	4562	11.7
50-59	2740	8.3	3401	9.2	4176	10.7
60-69	1986	6.0	2563	6.9	3460	8.8
70 & over	1340	4.0	1970	5.4	2666	6.8

Source: Census of Population 1950, 1960, 1970.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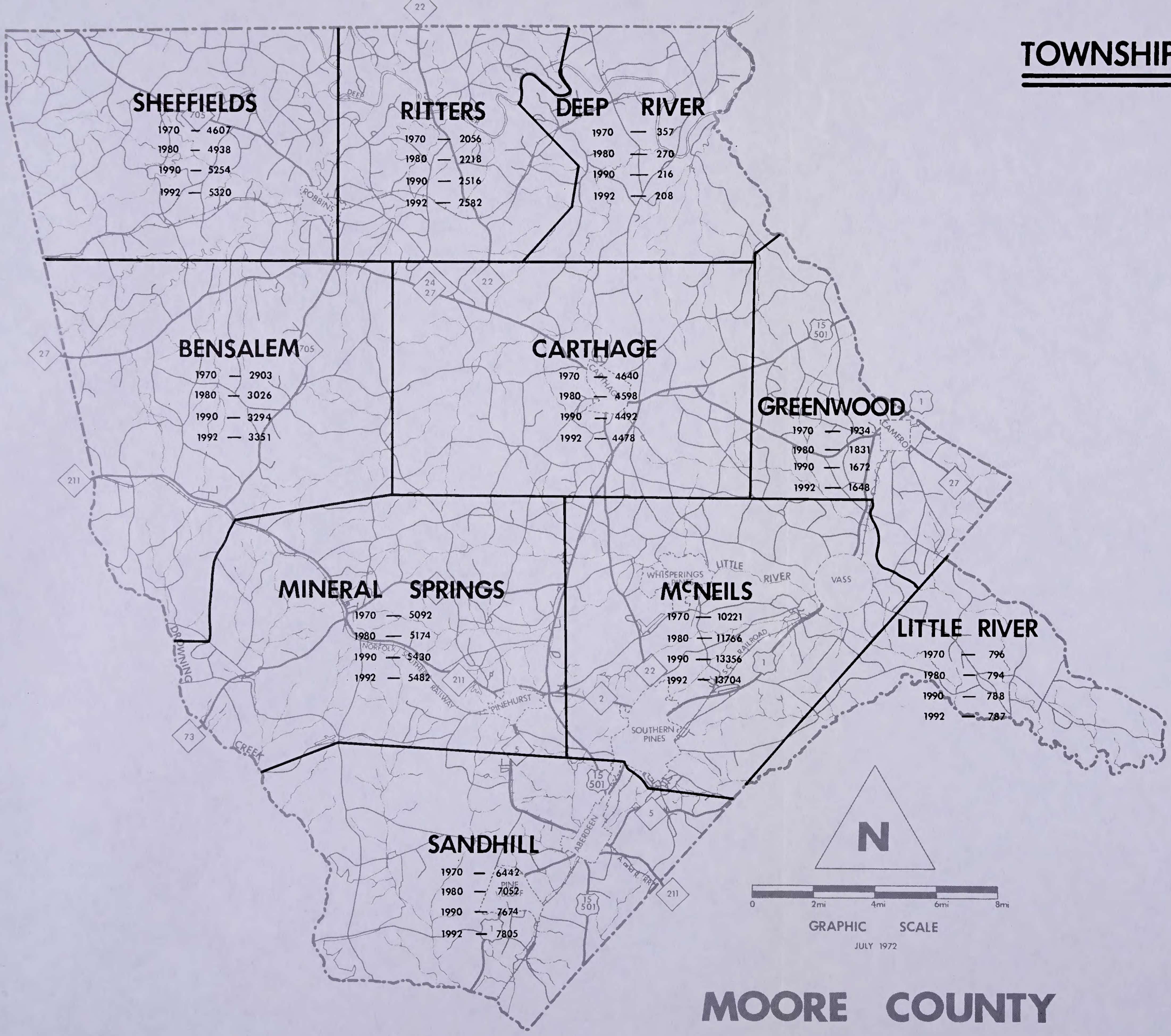
TOWNSHIP MAP



MOORE COUNTY

FIGURE 1

There are three factors which account for the increase in the median age. First, it is a well known fact that people are choosing Moore County as a place to retire; and thus the increase in the number of older persons tends to rise the median age. Second, there is an out-migration of young adults principally caused by better job opportunities in larger urban areas. The third factor is a decline in the birth rate. Between 1960 and 1970, the number of persons between birth and nine years declined by over 1600. This is attributable both to the out-migration of young adults and to improved family planning techniques. Figure 3, Age-Sex Distribution of the 1960 and 1970 Moore County Population, depicts the normal tendency of women to outnumber men and underscores the factors outlined above.

If the County desires either to stabilize the medium age of the population or to change its direction, provision of employment opportunities to keep and attract young adults will be necessary. Continuation of the present age trend will call for increasing emphasis on delivery of health care and relatively less emphasis on educational expenditures. If the County desires to keep and attract young people, the educational and health care systems will both require more emphasis.

Population Projection

There are three population projections available for Moore County. The North Carolina State Highway Commission has projected a 1990 population of 43,200. The U. S. Department of Commerce and the U. S. Department of Agriculture in a joint project have projected a population of 49,000 in 1990. The North Carolina Department of Natural and Economic Resources, Division of Community Services has projected a population of 45,365 persons for Moore

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Population Projection

There are three population projections available for Moore County. The North Carolina State Highway Commission has projected a 1990 population of 41,300. The U. S. Department of Commerce and the U. S. Department of Agriculture in a joint project have projected a population of 42,700 in 1990. The North Carolina Department of Natural and Economic Resources, Division of Community Services has projected a population of 43,462 persons for Moore

AGE DISTRIBUTION of MOORE COUNTY

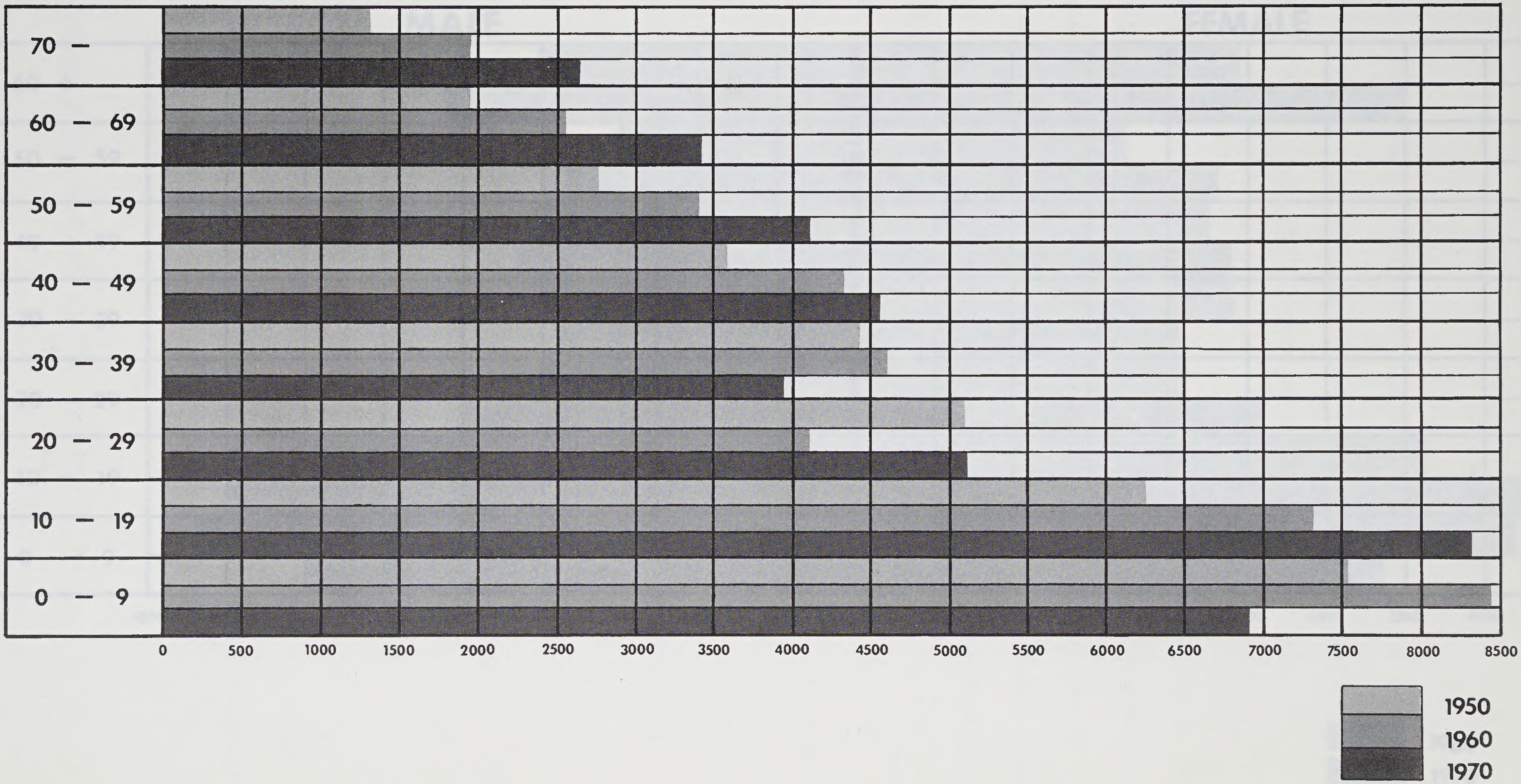

FIGURE 2

AGE – SEX DISTRIBUTION OF 1960 and 1970 MOORE COUNTY POPULATION

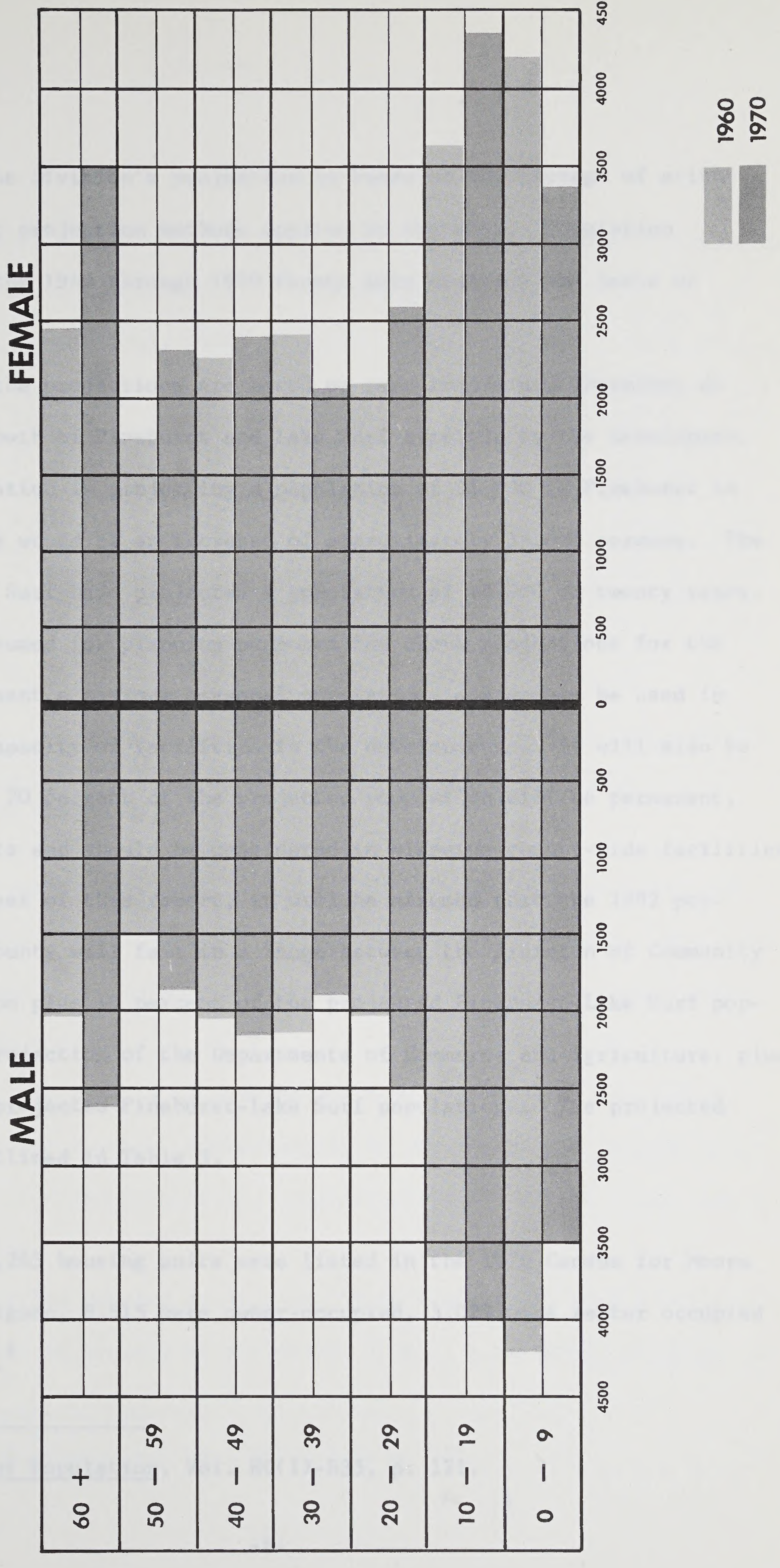

FIGURE 3

County in 1992. The Division's projection is based on the average of arithmetic and geometric projection methods applied by township. Population changes listed in the 1940 through 1970 Census were used for the basis of the projection.

All three of the projections are based on past trends and therefore do not reflect the growth of Pinehurst and Lake Surf expected by the developers. Diamondhead Corporation is projecting a population of 36,000 in Pinehurst in twenty years. This would be an increase of approximately 35,000 persons. The developers of Lake Surf have projected a population of 18,000 in twenty years.

It will be assumed for planning purposes the above projections for the developments represent a maximum seasonal population, and should be used in planning for the capacity of facilities in the developments. It will also be assumed that 10 to 20 percent of the projected population will be permanent, year-round residents and should be considered in planning county-wide facilities.

For the purposes of this report, it will be assumed that the 1992 population of Moore County will fall in a range between the Division of Community Services' projection plus 10 percent of the projected Pinehurst-Lake Surf population, and the projection of the Departments of Commerce and Agriculture, plus 20 percent of the projected Pinehurst-Lake Surf populations. The projected populations are outlined in Table 3.

Housing

A total of 13,265 housing units were listed in the 1970 Census for Moore County. Of this figure, 8,815 were owner-occupied, 3,023 were renter occupied and 82 were vacant.[1]

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[1] 1970 Census of Population, Vol. HC(1)-B35, p. 171.

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Housing

A total of 13,285 housing units were listed in the 1970 Census for Moore County. Of this figure, 8,513 were owner-occupied, 3,093 were renter occupied and 84 were vacant.[1]

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[1] 1970 Census of Population, Vol. HC(1)-B35, p. 171.

Table 3
Population of Moore County, 1992

	Low Projection		High Projection		
Townships	Trend	New Development	Trend	New Development	Range of Increase
Carthage	4,478		4,802		-162 to 162
Bensalem	3,351		3,577		488 to 674
Cheffields	5,320		3,684		713 to 1,077
Ritters	2,582		2,793		526 to 737
Deep River	208		245		-149 to -112
Greenwood	1,648		1,666		-286 to -268
McNeills	13,704		14,749		3,483 to 4,528
Sandhill	7,805		8,722		1,363 to 2,280
Mineral Springs	5,482	3,600	5,929	7,200	3,990 to 8,037
Little River	787	1,800	833	3,600	1,791 to 3,637
Subtotal	45,365	5,400	49,000	10,800	11,757 20,752
TOTAL	50,765		59,800		11,717 - 20,752

Source: North Carolina Department of Natural and Economic Resources, Division of Community Services.

The number of persons per unit varied little between owner occupied and renter occupied units. The County average was 3.2 persons per unit. The owner occupied units averaged 3.3 persons per unit, while the renter occupied units averaged 3.1 persons per unit.[2]

Measurement of the quality of housing was keyed to plumbing facilities. According to the census figures, approximately 25 percent of the housing units lacked some or all plumbing facilities. Approximately 20 percent of all units lacked a flush toilet.

To improve existing housing conditions, it is recommended that a building inspection department be created at the county level. A building, plumbing and

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[2] 1970 Census of Population, Vol. HC(1)-B35, p. 171.

minimum housing code should be adopted and a systematic enforcement program begun. At the same time, the County should consider establishing a county-wide housing authority to provide sanitary, low-cost housing. To insure that future developments do not form rural slums because of poor development practices, adoption of county-wide zoning and subdivision regulations should be considered.

Employment and Income

Moore County's employment base is relatively well diversified, and 14,980 of 15,590 persons over 16 years old in the labor force were employed at the time of the 1970 Census. An additional 146 persons between the ages of 14 and 16 were also employed. The North Carolina Employment Security Commission's statistical research section estimates as of August, 1972, there were 2,620 persons within a 25-mile radius of Carthage available for industrial employment. This includes qualified unemployed persons and those who could financially better themselves by working in industry.

Table 4 lists the occupation groups of the labor force residing in the County at the time of the 1970 Census. Manufacturing employment accounts for a little over one third of the labor force. The textile industry employs the largest number of persons in the County. Employment in all types of services accounts for a little less than one third of the employed labor force. During the 1960's, employment in service industries showed the most rapid growth in the County.

One factor not evident in the Census data presented, is the large number of persons commuting outside of the County for employment. In 1961, the North Carolina Employment Security Commission estimated that there were 2,000 persons commuting to jobs outside of Moore County. The 1970 Census recorded minimum housing code should be adopted and a systematic enforcement program begun. At the same time, the County should consider establishing a county-wide housing authority to provide sanitary, low-cost housing. To insure that future developments do not form rural slums because of poor development practices, adoption of county-wide zoning and subdivision regulations should be considered.

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Table 4
Moore County Employment, 1970

Category	Number of Persons	Percent
Agriculture	1,030	6.9
Mining	40	.3
Construction	864	5.8
Manufacturing	5,201	34.7
Transportation, Communication, Utilities	602	4.0
Wholesale	211	1.4
Retail Trade	1,935	12.9
Finance, Insurance, Real Estate	387	2.6
Services	4,710	31.4
TOTAL	14,980	100.0

Source: 1970 Census of Population, General Social and Economic Characteristics, PC(1)-C35, p.422.

2,481 persons residing in Moore County and working elsewhere.[3]

Analysis of wages and income in Moore County presents some interesting facts. As shown on Table 5, wages in Moore County are below the state average in every category. In relation to surrounding counties, Moore ranks seventh in average weekly wage and average in weekly manufacturing wage. Moore County ranks fifth in mean family income and fourth in per capita income. The increase in rank between the average weekly wage column and the median family income column indicates income from sources other than wages is important in the Moore County economy.

According to the 1970 Census, 20.3 percent of the families in Moore County had incomes below the poverty level. The average for the state was 16.3 percent.

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[3] 1970 Census of Population, PC(1)-C35, p. 386.

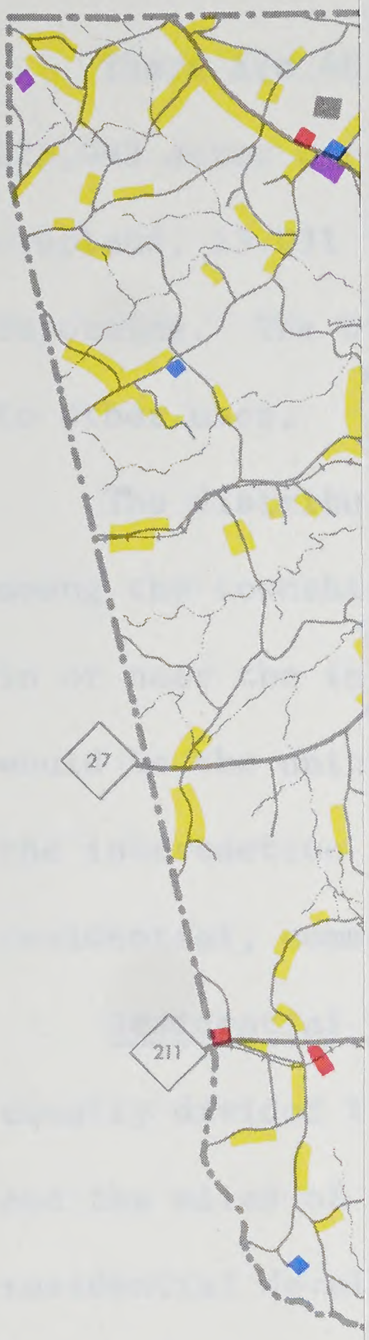
Table 5
Wages and Incomes of Moore and Surrounding Counties

County	Average Weekly Wage	Average Manufacturing Wage	Mean Family Income	Per Capita Income	Nonworking Ratio
Chatham	$ 91.87	$ 91.60	$7,955.00	$2,252.00	1.23
Cumberland	94.09	99.20	8,142.00	2,340.00	1.15
Harnett	85.86	89.33	7,268.00	1,998.00	1.44
Hoke	92.64	95.47	7,209.00	1,663.00	1.67
Lee	92.21	94.37	8,498.00	2,372.00	1.32
Montgomery	83.04	83.96	7,721.00	2,138.00	1.31
Moore	87.12	90.90	7,939.00	2,225.00	1.48
Richmond	89.13	93.59	7,978.00	2,180.00	1.45
Scotland	93.33	95.98	7,881.00	2,033.00	1.45
State	106.45	105.88	8,872	2,485	1.34

Source: North Carolina State Government Statistical Abstract, pp. 360-364.
1970 Census of Population, PC(1)-C35, pp. 427-433.

The poverty level threshold varies according to a family's situation. For example the property level threshold for a nonfarm family of four headed by a male was $3,745. The overall poverty threshold income varies between $1,478 and $6,116. Also in 1970, 8.9 percent of the families in Moore County had incomes of $15,000 or more, as compared to the state average of 11.5 percent.

Although service industry employment has risen significantly in the past ten years, total income from wages has not increased proportionately. In order to raise the level of income in Moore County to the state average, the County must concentrate on encouraging industry that pays wages above the average for the state.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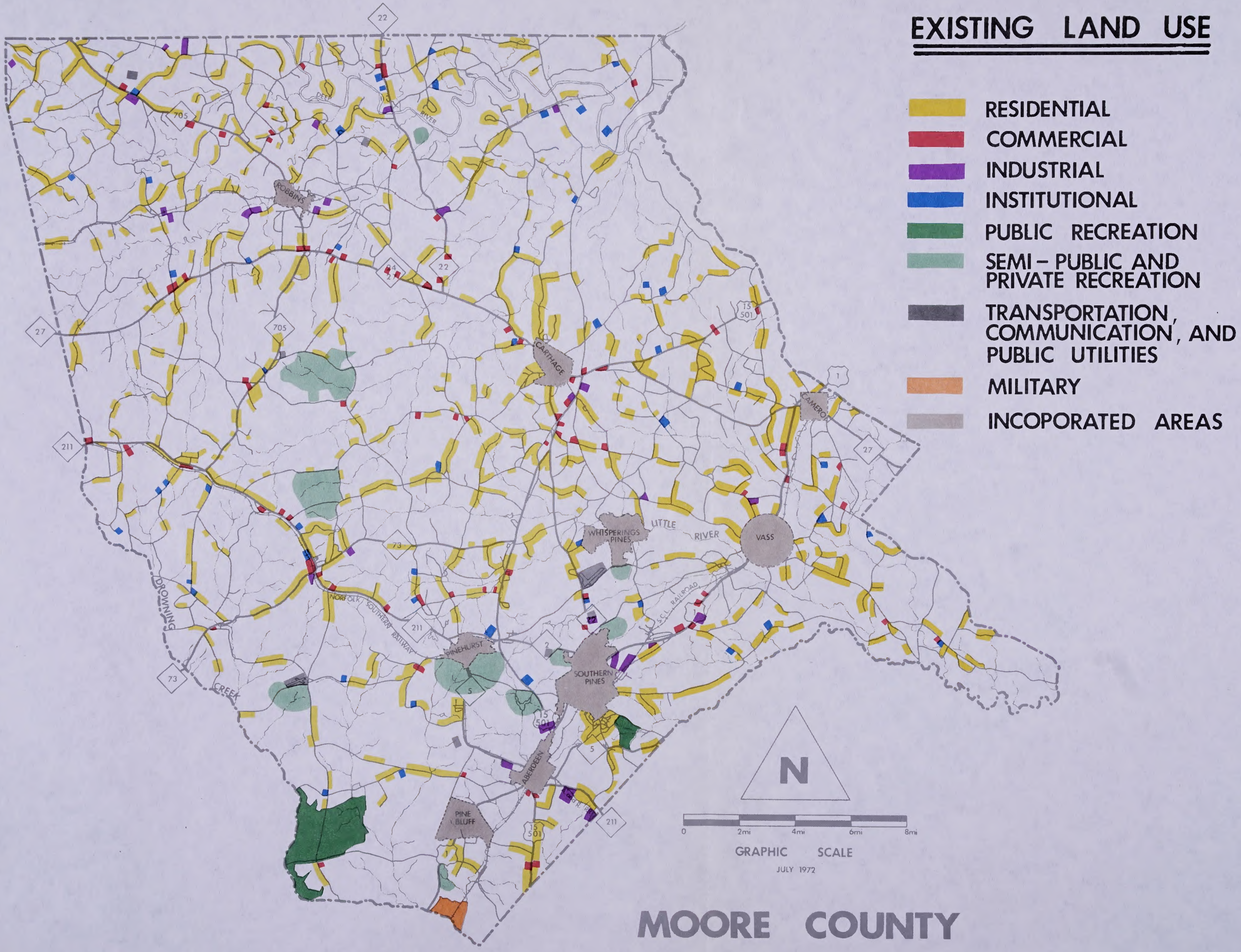

MOORE COUNTY

FIGURE 4

EXISTING LAND USE

There are 483,700 acres of land and water in Moore County. In 1971 225,043 acres were in farmland, this total consisted of 51,765 acres of cropland, 13,031 acres of pastureland and 160,247 acres of woodland on farms reporting. The balance of the land, 46.5 percent of the total, is devoted to other uses.

The distribution of developed land follows the population distribution among the townships. The greatest concentration of development is located in or near the incorporated areas in the county. An exception to this would be the unincorporated area of West End, located in the vicinity of the intersection of N.C. 73 and 211. West End contains a mixture of residential, commercial and industrial land use.

Residential Use. Residential development in Moore County is almost equally divided between incorporated municipalities and surrounding development and the miles of rural roads. Many rural roads have been subject to strip residential development. (see Figure 4). This type of development limits access to the property located at the rear, and will present a problem when the property to the rear is developed in future years. Strip development also increases the cost of extending utilities and other services.

Commercial Development. Except for a commercial area at West End and on U. S. 1 between Aberdeen and Southern Pines, there is no major commercial development outside of the incorporated towns. Most of the rural commercial development consists of gas station grocery store combinations along the major highways and at intersections of rural roads. The lack of strip development provides a good foundation for the concentration of future commercial developments in well designed, convenient shopping centers.

Industrial Development. The majority of Moore County's industry can be found along U. S. 1 from Southern Pines south to the County line and in the northwestern part of the County near Robbins. The proposed County water and sewer system will greatly increase the potential for locating industry in the County.

Transportation. Moore County is served by two U. S. highways, 1 and 15-501, and seven state highways, N. C. 24-27, N. C. 705, N. C. 22, N. C. 211, N. C. 73, N. C. 5 and N. C. 2.

The Southern Pines-Pinehurst Airport is owned by the County and has a 5,000 foot hard surfaced runway. Plans are underway to lengthen the runway to 7,500 feet to accommodate larger jets.

Rail service includes main lines of the Norfolk-Southern Railroad and the Seaboard Coast Line. The Aberdeen and Rockfish Railroad connects Moore County with the Seaboard Line in Fayetteville.

Moore County has interstate truck service available. Standard Trucking Lines maintains a terminal on N. C. 5 between Aberdeen and Pinehurst.

PHYSICAL FACTORS

In planning for Moore County's growth, there are four physical factors to be considered: climate, geology and topography, soils, and surface and ground water.

Climate

Moore County is located in the humid subtropical climate that generally prevails throughout the southeastern United States. This climate is

characterized by long, hot and humid summers and relatively mild, short winters. The mean annual temperature of Moore County is 61.1 degrees. The summer temperature averages 73.2 degrees and the winter temperature averages 50.2 degrees.

The average precipitation in Moore County is 44.61 inches and the majority of that occurs in spring and early summer. The major portion of summer precipitation is associated with convectional thunderstorms and occassional tropical depressions. Mid latitude low pressure cells which preceed cold fronts are the major source of precipitation from late fall to early spring.

With Twentieth Century techniques of heating and cooling, climatic conditions offer few if any limitations on development in Moore County, and have been an asset in developing the recreation potential of the County.

Geology, Physiography, and Topography

Geology. The geology of Moore County is composed of three separate formations. The northwestern section of the County is underlain by a volcanic slate series consisting of slate schist and related rocks referred to as the Carolina Slate belt. The Deep River Triassic basin lies in a northeast-southwest direction in Moore County. It is bordered on the north by the Carolina Slate Belt and on the south by the Sandhills of the Coastal Plain. Rocks associated with this formation include conglomerates, sandstone, and slates. The third geologic formation in Moore County is the Tuscaloosa formation. This formation is largely composed of sand, clays, and gravel. This formation overlaps the Carolina Slate and Deep River Basin formations, Location of wells and characterized by long, hot and humid summers and relatively mild, short winters. The mean annual temperature of Moore County is 61.1 degrees. The summer temperature averages 73.2 degrees and the winter temperature averages 50.2 degrees.

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septic tanks may be a problem where the Slate and Triassic are near the surface.

Physiography. Parts of two major physiographic regions are located in Moore County. The Piedmont Plateau is found in the northern two-fifths of the county. With the exception of the Deep River Basin, the remainder of the county is located in the Coastal Plain province.

Topography. The overall elevation of the county ranges from 190 feet, above sea level in the eastern part to over 600 feet above sea level in the northwestern part. Relief between hilltops and valley floors in the Piedmont area averages 75 to 100 feet. In the Deep River Basin relief averages approximately 75 feet between hilltops and valley floors, however at the rims of the basin the relief is as much as 250 feet. Relief in the Coastal Plain is as much as 150 feet and is greater in Moore County than in any other part of the Coastal Plains province .

Development of valley slopes should conform to the contours of the land as far as possible. Particular care should be exercised in areas with highly erosive soils.

Soils

The nature of soils should exert a strong influence on the type and techniques of the use of land. Five soil associations have been identified in Moore County; Lakeland-Norfolk; Hernden-Georgeville; Alamance-Orange; White Store-Creedmoor; and Swamp. Table 6 lists the suitability of the soils for various uses.

The distribution of the soil associations is shown in Figure 5.

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Table 6
MOORE COUNTY SOIL ASSOCIATIONS

Soil	Depth to Hard Rock	Water Table (Seasonally High)	Degree of Limitation for Sewage Disposal		Permeability Rate In/Hr	Shrink/Swell Potential	Light Industry	Recreation
			Filter Fields	Lagoons				
1. Lakeland-Norfolk	Rock Free	Deep	Slight - Moderate	Moderate	Moderate - Rapid	Slight	Slight	Slight - Severe
2. Herndon-Georgeville	Very Deep	Shallow - Deep	Severe	Moderate - Severe	Moderate	Moderate	Moderate	Slight - Moderate
3. Alamance-Orange	Very Deep	Shallow - Deep	Severe	Severe	Slow - Moderate	Moderate - Severe	Moderate - Slight	Slight - Moderate
4. White Store-Creedmore	Very Deep	Shallow - Deep	Slight - Severe	Moderate - Severe	Moderate	Moderate - Severe	Moderate - Severe	Slight - Moderate
5. Swamp	Very Deep	Shallow	Severe	Severe	Moderate - Very Rapid		Severe	Severe

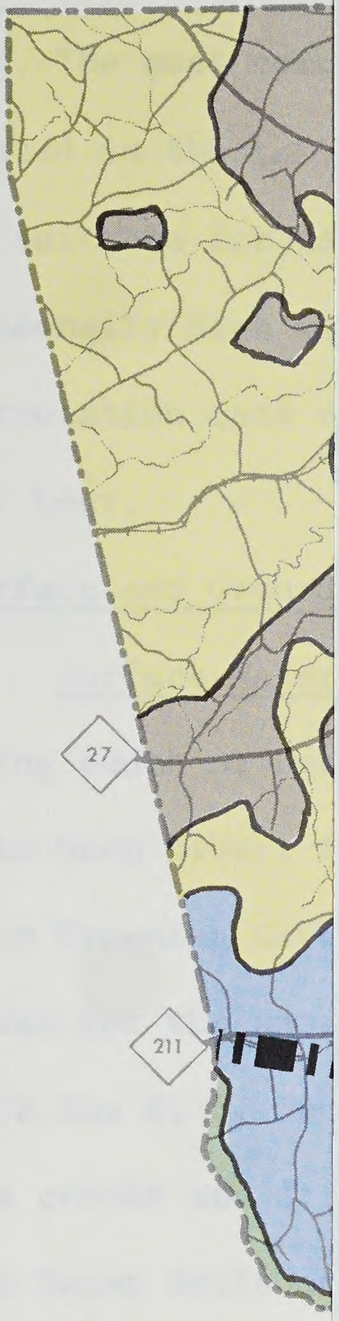
Source: U. S. Soil Conservation Service

Permeability	Grouping
Very Slow	Less than 0.60"/hr.
Slow	0.06 to 0.20
Moderately Slow	0.20 to 0.63
Moderate	0.63 to 2.00
Moderately Rapid	2.00 to 6.30
Rapid	6.30 to 20.00
Very Rapid	Over 20.00"/hr

Slight soil limitation is the rating given soils that have properties favorable for the rated use. The degree of limitation is minor and can be overcome easily. Good performance and low maintenance can be expected.

Moderate soil limitation is the rating given soils that have properties moderately favorable for the rated use. The degree of limitation can be overcome or modified by special planning, design, or maintenance. During some part of the year, the performance of the structure or other planned use is somewhat less desirable than for soils rated slight. Some soils rated moderate require treatment such as artificial drainage, runoff control to reduce erosion, extended sewage absorption fields, extra excavation, or some modification of certain features through manipulation of the soil. For these soils, modification is needed for those construction plans generally used for soils of slight limitation. Modification may include special foundations, extra reinforcement of structures, sump pumps, and the like.

Severe soil limitation is the rating given soils that have one or more properties unfavorable for the rated use, such as steep slope, bedrock near the surface flooding hazard, high shrink-swell potential, a seasonable high water table, or low bearing strength. This degree of limitation generally requires major soil reclamation, special design or intensive maintenance. Some of these soils; however, can be improved by reducing or removing the soil limits use, but in most situations, it is difficult and costly to alter the soil or to design a structure so as to compensate for a severe degree of limitation.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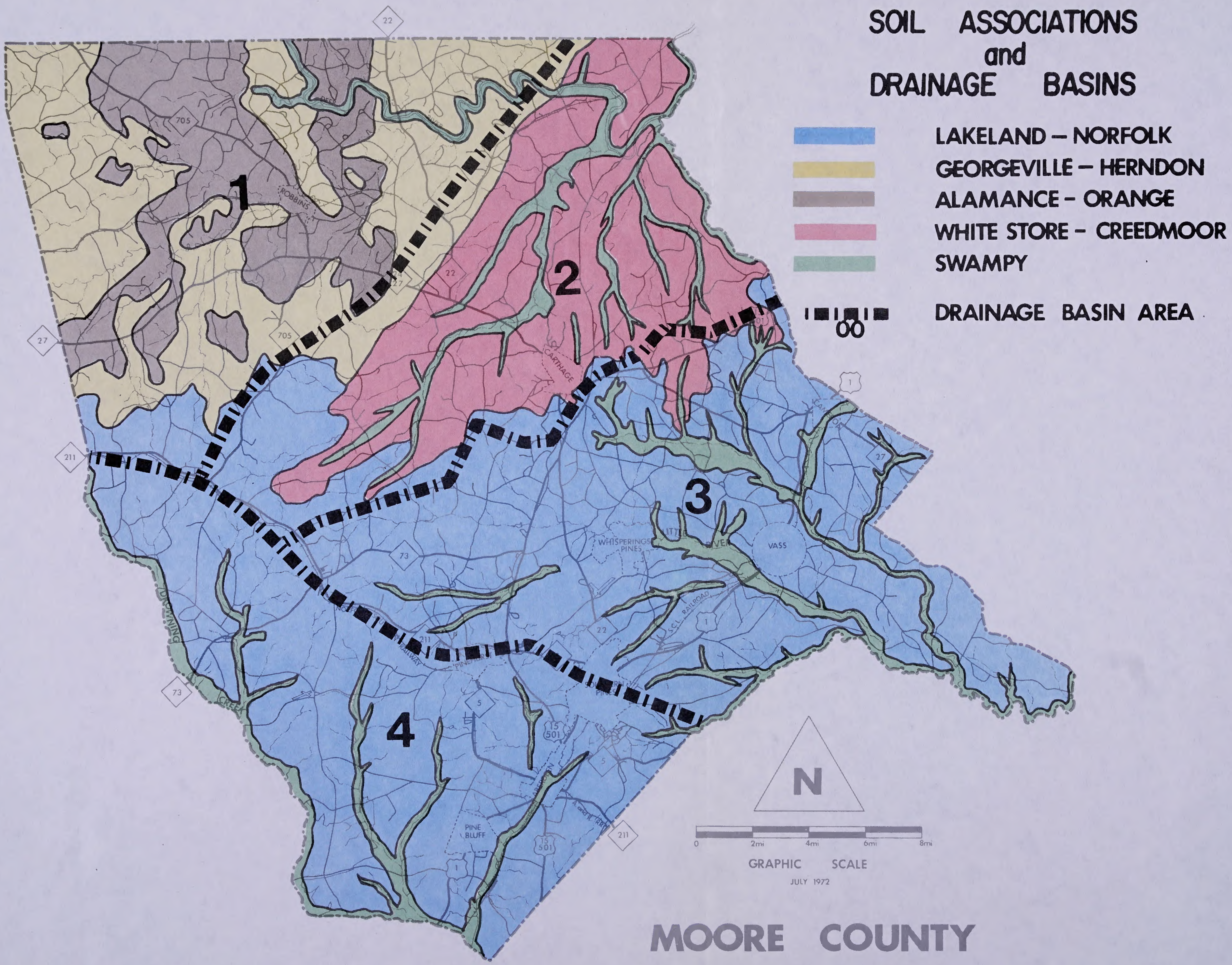
SOIL ASSOCIATIONS and DRAINAGE BASINS



MOORE COUNTY

FIGURE 5

FIGURE 1

The most common and one of the most important uses, for planning purposes, listed in the table is septic tank filter field suitability. For soil to be suitable for use as a septic tank filter field, the depth to the seasonally high water table should not be less than four feet and the percolation rate of the soil should fall between one inch and six inches per hour.

Surface and Ground Water

Surface Water. There are four major drainage basins in Moore County lying south of Deep River, as shown on Figure 5. Basins I and II drain into Deep River; Basin III drains into Little River, while Basin IV drains into Drowning Creek. Plans are being formulated for the use of Drowning Creek for the water supply source for the county-wide water system. In 1972 the U. S. Geological Survey delineated the 100 year flood level of the creeks and streams in Moore County. The floodplains correlate with the Swamp Soils outlined in Figure 5.

Ground Water. The ground water supply in Moore County is considered to be adequate for domestic purposes throughout the County. The abundance and suitability varies according to the geologic formations. The availability of ground water in the slate formations depends upon the fracturing and weathering of the formation. The best well locations are in low areas and where dikes outcrop or where the rock formation is significantly weathered. The yield from the Triassic formation is considered adequate only for domestic purposes because of compaction and cementation which has taken place within the formation. The availability of ground water from the Cretaceous formation varies considerably. Well yields ranged from 8 to 208 gallons

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In 1972 a well was brought in at Lake Surf initially rated at 400 gallons per minute. The reserves are not fully known but are expected to be considerable. Unless other new discoveries are made, the County in general could not rely on ground water in sufficient quantities to meet the County's water system distribution to meet requirements.

GUIDELINES FOR DEVELOPMENT

This section is divided into two parts; the first part outlines general guidelines for development in relation to the physical characteristics of land, the second part outlines the best land uses for each of the four drainage basins in Moore County . (see Figure 5).

General Guidelines

Prior to this century there were many natural limitations on land which the engineering and building technology of the time could not overcome. Since the beginning of the Twentieth Century, development under almost any type of natural condition has become technologically if not economically feasible. The development of land under any circumstances can have both good and bad results. Table 7, 8, and 9 are presented as a general guide for the optimum development of land according to soil, slope and water conditions.

Drainage Basins

Each of the four drainage basins (Figure 5) were analyzed by the

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[4] 1961 Geology and Ground Water Resources of the Fayetteville Area, N. C. Department of Water Resources, pp 72-74.

Table 7
Development Guidelines for Soils

Soil Type	Suitability	Permitted Uses	Restrictions	Methods of Implementing Policies
Wet Soil	Such soils perform an important water storage function; when septic tanks are used, water supply may be contaiminated; foundations settle and crack; stagnant pools may exist during certain periods.	"Floating" or other specially constructed structures may be permitted when supplied with public water and sewerage; selective draining or filling may be permitted if it does not interfere with the water supply.	No septic tanks; deep wells permitted but only where development can be tolerated and septic tanks are absent.	Subdivision and sanitary regulations requiring public water supply and sewage disposal.
Impervious Soil	Impermeability of soil may cause septic tanks to overflow and contaminate water supply; unsuitable for development without public water supply and sewerage.	No special development limitation with public water supply and sewerage.		
Poor Load-bearing Soil	Generally unsuitable for intensive development because of difficulty and cost of construction.	Certain types of light or flexible structures; recreation areas; agriculture.	Heavy structures must be anchored in bedrock.	Building code and grading ordinance prescribing development standards.

Planning Advisory Service, Environmental Planning: 1; Environmental Information for Policy Formulation, PAS Report #263, (ASPO, Chicago, Illinois) 1970, pp. 30-34.

Table 8
DEVELOPMENT GUIDELINES FOR SLOPES

Slope	Percent	Suitability	Permitted Uses	Restrictions	Methods of Implementing Policies
Flatland	0-5	Depending on other conditions, flat land is highly suitable for and tolerate to development.	All uses.	No restrictions except pollution control (social, economic, technical, etc., factors may suggest other limitations.	Pollution control ordinances, land-use controls.
Low Slope	5-10	Fairly tolerant to development although excessive removal of ground cover may cause erosion; generally are good sites for residential development.	Residential development, intensive and extensive recreation, agriculture and grazing.	Densities may be fairly high with grading controls and limitations on vegetation removal and sedimentation.	Grading ordinances limiting terracing, topsoil and vegetation removal, etc,; subdivision controls setting appropriate street and utility design standards; zoning to limit density of development.
Moderate Slope	10-25	Very high construction costs; loss of ground cover may cause erosion and frequent land slippage; often loss of scenic beauty.	Limited development contour agriculture, forest.	Density of about one house or less per acre; maintenance of vegetative cover; erosion control; retaining walls; roads turned slightly upslope from contour lines; special hillside development zoning controls to minimize grading; drainage control.	Density zoning; grading ordinance requiring sedimentation control; subdivision ordinance requiring maintenance of vegetation and design standards for streets; these may all be incorporated in special hillside development controls.
Steep Slope	above 25	Development causes major erosion problems by increasing runoff velocity; major site engineering necessary; difficult to farm; suitable for extensive recreation; often of scenic beauty.	Open space uses; reforestation when necessary; recreation	No development (or highly regulated and engineered development of very low density).	Public purchase in fee; open space zoning; scenic or other easements; reforestation

Source: Planning Advisory Service, Environmental Planning: 1, Environmental Information for Policy Information, PAS Report # 263, (ASPO, Chicago, Illinois, 1970). pp. 30-34.

Table 9
DEVELOPMENT GUIDELINES FOR SURFACE AND SUBSURFACE WATER

Feature	Suitability	Permitted Uses	Restrictions	Implementation
Surface Water and Riparian Land	Value for water supply, waste dispersion, transportation, recreation, power generation, source of food, scenic beauty quality and quantity of water needs to be maintained.	Harbors, water/sewage treatment plants, recreation, marinas, water related industry, cluster development, public access points	No pollutors (including septic tanks); no non-water-related development; no development that will produce undesirable changes in surface water quality	Planned unit development controls; sanitary ordinance prohibiting use of septic tanks; water quality standards to restrict discharge of pollutants; water soning to separate incompatible water users; zoning to restrict shoreline development to water compatible uses; public works planning.
Floodland	Essential role in carrying excess water during floods; danger to life and property; provides recreational land; filling, damming or leveeing decrease storage capacity and flood velocity increasing flood potential downstream; soils often very fertile and suitable for agriculture, usually contains substantial ground	Those unharmed or improed by flooding; e.g., those associated with surface water and riparian land and forestry, so some types of agriculture, extensive recreation, institutional open space, for housing and other uses, impoundment basins.	Same restrictions as for surface water and riparian land; flood-proof development; filling and diking only where essential and where flow is not seriously restricted.	Same method as for surface water and riparian lands; zoning controls to exclude structures from the channel and floodway; building code requiring flood-proofing of structures; limitations on grading, filling, dredging, and diking.
Wetland: Marsh, Bog,	Act as sponges to absorb excess run-off; reduces flooding potential; important wildlife habitats; recreational, educational, scientific value; some agricultural value; often have scenic beauty; filling may cause flooding elsewhere.	Recreation: hunting, fishing, sailing, observing; scientific investigations; certain types of agriculture.	No on-site peripheral development which will interfere with maintenance of the ecosystem, especially its water storage and wildlife maintenance ability.	Public purchase or purchase of easements; grading and filling ordinances; agricultural zoning limitations on surrounding areas to preserve ecological processes; e.g., withdrawal of water, diking, cutting of channels, excessive development; conservation zoning.
Aquifer[1]	As major source of water, quality must be maintained; removal must not exceed rate of replenishment.	Varies depending on permeability of over-laying strata; generally, any use which maintains high water quality and quantity.	No development which will affect the quality and quanitity of water or be structurally adverse to the presence or withdrawal of groundwater.	Limitations on groundwater withdrawal.
Aquifer-recharge Area[2]	Intolerant to development because of danger of polluting water supply.		No disposal of possible pollutants, specifically, no septic tanks; sewers must be sealed to avoid leakage; investigate effects of any disturbance to area such as channel digging or widening, dredging, filling that might permit the intrusion of pollutants.	Subdivision and sanitary controls requiring public sewerage; pollution discharge controls; prevention of intrusion of salt water or other groundwater contaminants; special sewer construction techniques; limitations on dredging, stream widening; filling, etc.

Source: Planning Advisory Service, Environmental Planning: 1, Environmental Information for Policy Information, PAS Report #263, (ASPO, Chicago, Illinois), 1970, pp. 30-34.

[1] A water-bearing layer of sand, gravel, or porous rock.

[2] Area of interchange between an aquifer and the surface; the point at which precipitation and surface water infiltrate the aquifer

Agricultural Extension Service, the Soil Conservation Service, the County Forester, and the County Planner. Based on their collective expertise and the physical limitations within the drainage basins, the following uses are recommended.

Basin I. Agriculturally this basin is best suited for pasture, livestock, soybeans, corn and other small grains. Forestry activities in this basin would be more productive if the natural hardwoods were replaced with Loblolie pine.

Except in the southern area where Coastal Plain soils are present, development of residences over intensive areas or uses with a large volume of sewage will require water and sewer service. Rural residential development will have septic tank and filter field problems.

Basin II. While being the poorest farmland in the county, Basin II is the best land for forestry. There are many areas suited to being used as lake sites, which will assist in the development of hunting and fishing areas.

The basin is generally not suitable for intensive or extensive building development. Care must be exercised due to the high erodability of the soil. There is a severe limitation on septic disposal systems and buildings would be subject to foundation problems.

Basin III. Two areas exist within the basin having different conditions. The land in the Little River floodplain and north and east of Vass is a more fertile area than the remainder of the basin. This area has been described as the "Tobacco Shed." In addition to tobacco it is suited to vegetables, small grain, and soybeans. Near streams the land is suitable for timber production. Since this section of the basin is the best agricultural land in Moore County, it is desirable that as much of this land as possible be preserved for agriculture.

The remainder of the basin, to a lesser extent is suitable for farming. The best use of this land is recreation and residential development. The soil is well suited to growing coastal bermuda grass for pasture land.

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Basin III. Two zones exist within the basin having different conditions. The land in the Little River floodplain and north and east of Vass is a more fertile area than the remainder of the basin. This area has been described as the "Tobacco Road." In addition to tobacco it is suited to vegetables, small grains, and soybeans. Near streams the land is suitable for timber production. Since this section of the basin is the best agricultural land in Moore County, it is desirable that as much of this land as possible be preserved for agriculture.

The remainder of the basin, to a lesser extent is suitable for farming. The best use of this land is recreation and residential development. The soil is well suited to growing coastal Bermuda grass for pasture land.

Basin IV. The soils and land capability of this basin are similar to the latter section of Basin III. The most suitable agricultural use is pasture land for horses and cattle. The bottom land along Drowning Creek is suitable for commercial forestry.

The land has very favorable characteristics for extensive or intensive development. It is suitable to residential and recreational development. Landscaped areas in deep sands require large amounts of fertilizer and irrigation for vegetation to flourish.

Implimentation

At the present time the County has several tools available for influencing land use and development practices. To control use of land, the County can -- and has for selected areas -- adopt zoning regulations. To control development practices the County has adopted subdivision regulations for the zoned areas. The coverage of these ordinances should be expanded to include areas expected to develop in the next twenty years and areas which are not suitable for extensive development due to physical limitations. The county should consider the adoption of a floodplain ordinance prohibiting development in areas below the 100 year flood level. The county should also adopt a grading ordinance designed to protect streams, sites under development and adjacent property from excessive erosion.

In future years the County may be able to influence development through property evaluation. Land most desirable for development would be valued in a manner to provide incentive for development while land not suitable for development would be valued at a level which would not provide incentive for development. To some extent this can be accomplished through the controls outlined above.

PROJECTED LAND USE REQUIREMENTS

The purpose of this section is to outline, for the 1972-1992 planning period, the projected land requirements for residential, commercial and industrial uses and their distribution in the County.

Residential Acreage Requirements

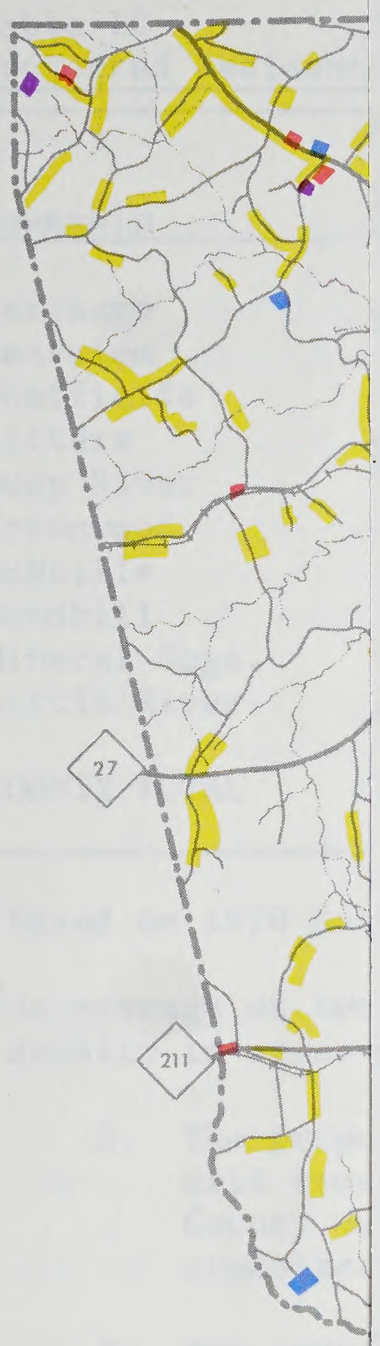
The residential acreage requirement and distribution is based on the population projections in this report. The residential acreage projections are outlined in Table 10. On the Sketch Development Map (Figure 6) the projected areas of residential development have been doubled to reflect open space and street right-of-way requirements. It should be noted that the residential projections do not include replacement housing for abandoned units or seasonal housing units; the Sketch Development Map does show the areas where seasonal housing units are expected to develop as a major residential land use.

The County water and sewer system,which will initially serve the southern parts Mineral Springs and McNeils Townships, and all of Sandhill Township, will permit a higher density of development. The availability of the systems may shift more residential development into areas where the service will be available.

Manufacturing Acreage Requirements

In determining the industrial acreage requirements for the planning period, there are several assumptions to be made.

1. It is assumed that the ratio of persons in the labor force to total population will not change significantly. (In order for this to be realized, suitable jobs for persons entering the labor market must be available.)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SKETCH DEVELOPMENT PLAN MAP 1992

🟨 URBAN CLUSTERS AND RESIDENTIAL AREAS

🟥 COMMERCIAL

🟪 INDUSTRIAL

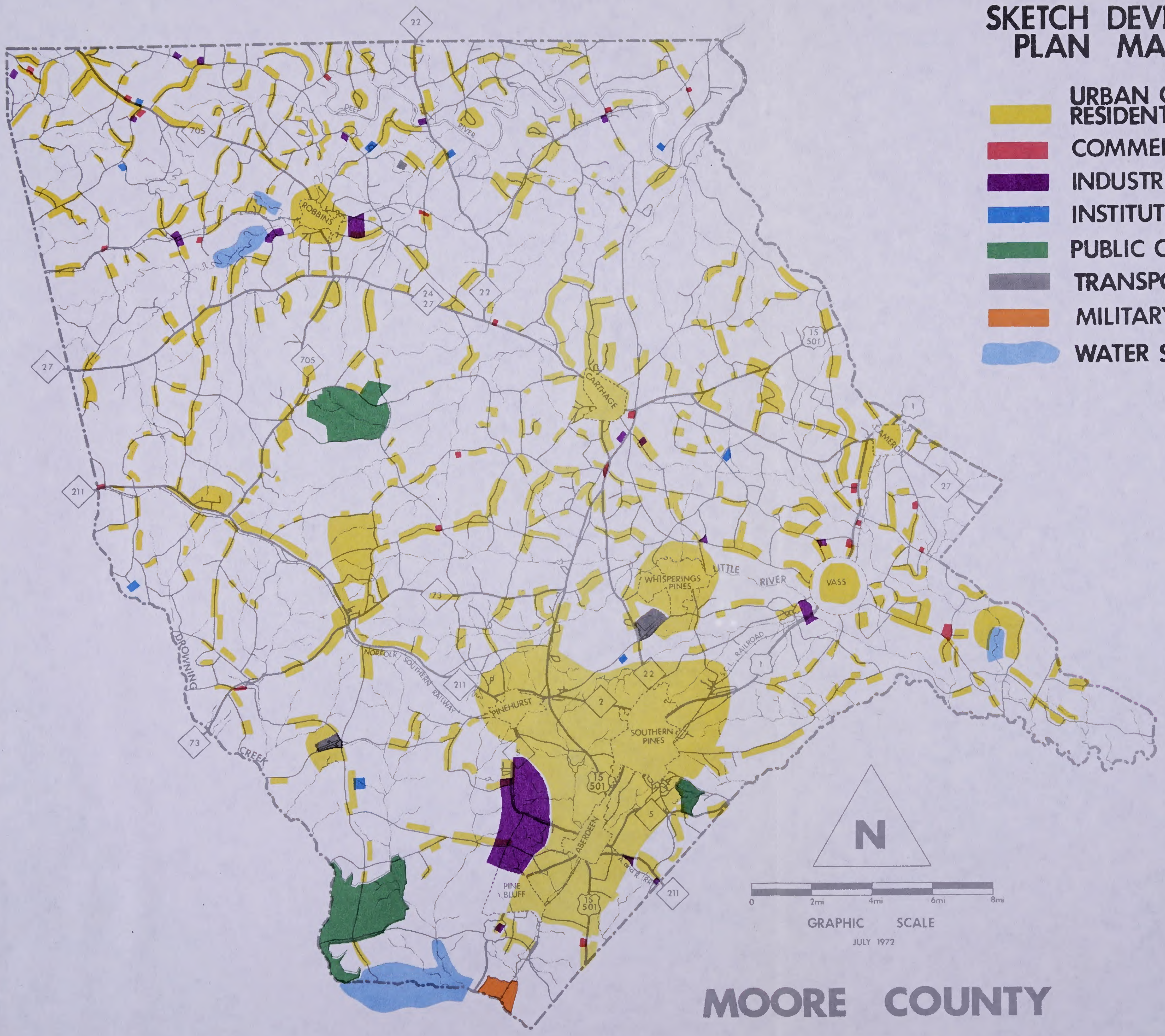
🟦 INSTITUTIONAL

🟩 PUBLIC OPEN SPACE

⬛ TRANSPORTATION,

🟧 MILITARY

🟦 WATER STORAGE



MOORE COUNTY

FIGURE 6


SKETCH DEVELOPMENT
PLAN MAP 19[illegible]
URBAN CLUSTERS AND
RESIDENTIAL AREAS
COMMERCIAL
INDUSTRIAL
INSTITUTIONAL
PUBLIC OPEN SPACE
TRANSPORTATION
MILITARY
WATER STORAGE
COUNTY

FIGURE 6

Table 10
Projected Residential Acreage Requirements

Township	Population Change	Dwelling Unit Change	Units Per Acre	Additional Acreage
Carthage	-162 - 162	-51 - 51[1]	2[2]	0 - 26
Bensalem	448 - 674	140 - 211	2	70 - 106
Sheffields	713 - 1,077	223 - 336	2	112 - 168
Ritters	526 - 737	164 - 230	2	82 - 115
Deep River	-149 - -112	-47 - -35	2	0
Greenwood	-286 - -268	-89 - -84	2	0
McNeills	3,483 - 4,528	1,088 - 1,415	2	363 - 472
Sandhill	1,363 - 2,280	426 - 712	3	142 - 237
Mineral Spgs.	3,990 - 8,037	1,247 - 2,512	3	416 - 837
Little River	1,791 - 3,637	560 - 1,136	2	280 - 568
COUNTY TOTAL	11,717 -20,752	3,661 - 6,480		1,465 -2,529

[1] Based on 1970 Census of Population average of 3.2 per/household.

[2] An average of two units per acre was considered to be the maximum feasible density in areas not projected to have a sanitary sewer system.

2. The proportion of manufacturing employment within the labor force will remain approximately the same. (In order to realize this the County must have an aggressive and successful industrial promotion organization).

3. New industries will employ approximately 15 employees per developed acre on the plant site, and that the total plant site will be five times the area required for the building.

These assumptions indicate that the labor force growth range, in keeping with the population growth range, will be between 4700 and 8400 persons. Manufacturing employment will increase in a range between 1600 and 2900 persons. The total acreage required for industrial purposes will range between 550 and 970 acres.

Areas of the County where industry is projected to locate are outlined on the Sketch Development Map. The greatest potential lies along N. C. 5 between

Pinehurst and Aberdeen. The area has adequate transportation and will have access to the county water and sewer system. In choosing specific sites the following standards are recommended.

1. The land must be physically suitable with reasonably level topography and good drainage.
2. Access should be available from highways, railroads, or both.
3. Sites must be of varying sizes with both close-in and fringe area locations in order to accommodate the different demands and needs of industrial and wholsesaling uses.
4. Basic utilities such as water, sanitary sewer, and power must be available or easily obtainable.
5. The landscape should be attractive. Deteriorating or deteriorated areas are not suitable as sites unless complete redevelopment is undertaken.

Commercial Area Requirements

At the present time all major commercial areas are located in or near concentrations of population in incorporated areas. Two major shopping centers are in the early stages of development. A 27-acre center will be located at the traffic circle near Pinehurst adjacent to Moore County Hospital, and a shopping center with 100,000 square feet of retail area will be located at the intersection of U. S. 15-501 and 1 between Aberdeen and Southern Pines. During the planning period the commercial needs of Moore County can best be served by the location of major retail outlets for goods and services in or near the towns in Moore County. Outlying commercial areas offering convenience goods and services will be needed to serve the day to day needs of rural residents. Typical services to be found in these outlying areas would include: Automobile service including minor repairs, eating establishments, grocery stores, and

personal services. Using the standard of two additional acres of neighborhood for each increase of 1,000 persons, Moore County would need between 23 and 41 acres of commercial development over the next twenty years.

Public Acreage Requirements

In the next twenty years, there are two possible major purchases of land planned for public use. The two uses are a county water system reservoir and a state park. The county reservoir site is to be located on Drowning Creek west of U. S. 1 and will cover between 1,400 and 1,500 acres in Moore County. The reservoir would back water up Horse Creek to the confluence of Deep Creek and would back water up Drowning Creek to its confluence with Naked Creek in Richmond County. The location of the reservoir is shown on the Sketch Development Map.

STATE PARK SECTION TO BE COMPLETED WHEN THE PERTINENT INFORMATION IS MADE PUBLIC KNOWLEDGE.

RECOMMENDATIONS

The purpose of this section is to bring together all the recommendations in the report and to outline a time framework for implementation of the Sketch Development Plan. It should be noted that a number of plan and ordinance revisions are indicated in later time periods.

1973 - 1974

1. County Facilities Plan. Develop a twenty year county facilities plan including: water and sewer, solid waste disposal, education, recreation, fire protection and cultural facilities.

2. Building Inspection. Establish a building inspection department. Adopt a complete set of building codes and a minimum housing code.

3. Housing Authority. Investigate the feasibility of establishing a county-wide housing authority to provide safe, sanitary housing for low income families.

4. Transportation. Mutual adoption of a County Thoroughfare Plan with the N. C. State Highway Commission.

1975 - 1978

1. Water and Sewer System. Construction of water and sewer system is most important and should be given top priority during this time period.

2. Industrial Promotion. Organize an effective industrial promotion team to seek industry which provides a high wage scale. Examine county policies in relation to their effect on industrial location.

3. Housing. If county-wide housing authority is feasible, form a housing authority and formulate a "better housing strategy."

4. Development Ordinances. Adopt floodplain regulations and zoning and subdivision regulations in areas undergoing recreational development.

1979 - 1982

1. Sketch Development and County Facilities Plan. Revise both of these plans to reflect changes in development pattern and population characteristics.

2. Development Regulations. Revise development regulations to reflect new techniques and standards for development.

3. Industrial Promotion. Evaluate success and revise as necessary.

1983 - 1992

1. Plans and Ordinances. Revise all plans and ordinances as necessary.

2. Housing. Review progress to determine the change of the quality of housing in the county.

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